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A Not-So-Obvious Solution to the Black Beetle Puzzle

year and two-year colleges' biology programs and facilities were made on the rating scale for as many of the items as possible.

Last summer (1971) a five-week institute was held again at Drake. During the morning sessions of each of the five weeks one of the five major areas of biology was covered: genetics by Dr. Huffman, Central; botany of lower plants by Dr. Frank, ISU; microbiology by Drs. Rodgers and Elliot, Drake; ecology by Dr. Kingsbury, Drake; and physiology by Dr. Kodama, Drake. Afternoon sessions covered special labs, which were favorites of the participants of the institute, and areas of improved teaching techniques, test construction, behavioral objectives, measurement and evaluation. All of these sessions were aimed at improvement of two-year college biology teaching.

Finally, plans were made to extend the program, to be able to pass on the benefits to other schools; hence our northern Iowa meeting.

A NOT-SO-OBVIOUS SOLUTION TO THE BLACK BEETLE PUZZLE

True or false: Most desert animals whose life styles keep them out and around during the day are light in color because, as scientists know, light coloration reflects heat and desert animals would naturally evolve in that direction?

False! Most day-roving desert animals are dark and scientists are not sure why.

Dark coloration is known to absorb heat; it appears to fly in the face of reason that desert animals should somehow have found being dark an aid to survival.

The ecological riddle, in fact, has so plagued scientists that they have even given it a name: The Black Beetle Puzzle, after the black darkling beetles (tenebrionids) whose superior adaptation has been studied in several desert environments.

The black darkling beetle is so well adapted to desert conditions, says Dr. William J. Hamilton III, of the University of California's Davis campus, that it seems to thrive where its chalk-white cousins cannot.

Neither the black nor the white tenebrionid, says Hamilton, could survive midday temperatures in a really hot desert. So in most deserts of the world, the white ones don't even exist, though black ones do.

In the relatively mild Namib desert of southern Africa, however, where Hamilton is working under a National Science Foundation grant, both can be found. There the white beetle spends much of the day out of doors while the black ones burrow for cover when the sun climbs. Nevertheless, he finds, the black variety may be better able to capture available energy in its microenvironment and so thrive at the expense of other species.

The mistake, says Hamilton, is to forget that deserts are not uniformly hot. Early and late in the day they can be downright chilly. Desert day-dwellers may not need techniques to keep them cool as much as they do techniques to keep them warm; black coloration does that nicely.

It equips the black beetles to trap and hold as much heat as possible in the chilly mornings and evenings. They can come out to forage earlier and stay out to forage later than could light-colored species. They can afford to avoid the heat of the day.